

A High Reliability Frequency Stabilized Semiconductor Laser Source, Phase I

Completed Technology Project (2009 - 2009)



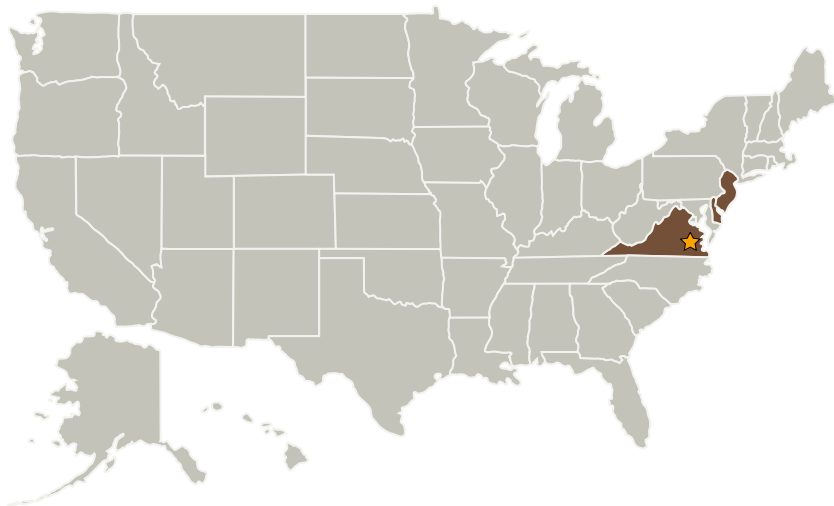
Project Introduction

NASA needs high stability laser source of 1W output power for Lidar applications. Princeton Optronics has developed ultra-stable, narrow linewidth diode pumped solid state lasers using stable packaging and high performance locker. We have also developed high power Vertical Cavity Surface Emitting Laser (VCSEL) semiconductor laser sources. We propose to develop a high reliability master oscillator power amplifier (MOPA) type of source with VCSEL as a master oscillator and a semiconductor optical amplifier to obtain a power level of 1W CW. We would use our laser welded packaging technology to develop a rugged package which could be space qualified. By the end of the SBIR program we plan to develop a CW laser source in MOPA configuration for phase modulation and the packaged unit can be space qualified.

Anticipated Benefits

Potential NASA Commercial Applications: A high stability laser will have a significant market for LIDAR, RF photonics and sensor applications. The users will be military, NASA, homeland security, cable television distribution and oil exploration industry. The total market for ultrastable lasers is currently at tens of millions of dollars. Princeton Optronics will commercialize the product very soon after development.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
★ Langley Research Center (LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Princeton Optronics, Inc.	Supporting Organization	Industry	Mercerville, New Jersey

Primary U.S. Work Locations	
Delaware	New Jersey
Virginia	

Project Transitions

January 2009: Project Start

July 2009: Closed out

Closeout Summary: A High Reliability Frequency Stabilized Semiconductor Laser Source, Phase I Project Image

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

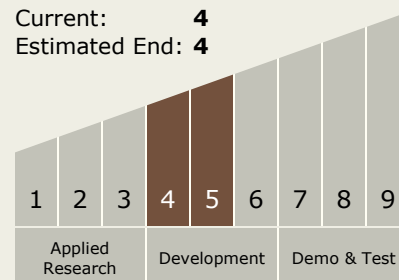
Carlos Torrez

Principal Investigator:

Laurence S Watkins

Technology Maturity (TRL)

Start: **5**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.5 Lasers